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OBJECTIONS TO A MONETARY STANDARD BASED ON INDEX NUMBERS

The attention of the public has been fixed for some time on the continued rise of prices and the increase in the cost of living commonly supposed to be a consequence. From time to time suggestions have been made with a view of providing checks or remedies for changes in prices. The most notable of recent years is that brilliant suggestion recently made by Professor Irving Fisher for abstracting seigniorage on the coinage of gold in order to keep the value of the gold coin at a point determined by index numbers; or, in other words, by the indirect application of the so-called tabular or multiple standard. But we must be on our guard against permitting ourselves to be carried away with belief in the possible success of a brilliant device without careful consideration of the question whether the thing that is accomplished by this device is the thing at which after all we are aiming.

Public uneasiness aroused by the change of prices in one direction or another over considerable periods and to a considerable degree, is not a new phenomenon; nor are attempts to meet the difficulties, real or supposed, which their changes cause, of recent origin. Students of the matter have not yet forgotten the quarter of a century of falling prices beginning in the early seventies and lasting until some dozen years ago, nor the world-wide agitation in behalf of the establishment of international bimetallism as a cure for the ills which were supposed to arise from that long-continued decline. Before that agitation, and yet doubtless within the memory of some men still living, was that of the late forties and early fifties of the nineteenth century, which led to the brilliant efforts of Stanley Jevons to make a clear analysis of the situation and suggest a remedy. His words might almost have been written in 1912 instead of 1869: "I cannot help then reasserting with the utmost confidence that a real rise of prices, to the extent of 18 per cent, as measured by fifty chief commodities, has been estab-

lished since the year 1849. . . . Nor can we well avoid attributing it to the effect of the gold discoveries."

Historical attempts to correct price changes may be grouped into four classes. First are the well-known instances of efforts of the authorities in almost every country to fix the prices of staple products. We have a recrudescence of these proposals in the sporadic demands expressed in the public press for the government to regulate trusts by regulating the prices of their products, and also in the demand to regulate the prices of products of public utilities companies. There is justification for price regulations of the latter sort that is not applicable at all to attempts to regulate the prices of competitively made products.

The second method to which resort has been had for preventing the alleged loss from price changes is the attempt to find an ideal or unvarying standard. Accounts of this are to be found in theoretical literature rather than in legislation or social programs.

The third class of proposals includes those which would change the money supply without statistical information indicating the amount of change needed, or the degree of rapidity with which it should proceed. The most important of these proposals is bimetallism, which aimed to cure the ills of a falling price period, but would not be applicable to those of a period like the present.

The fourth method, known as the tabular standard, is that which attempts to determine the change in the average of prices and to pay in money in amounts proportionate to the degree of this change. A fifth method is that proposed by Professor Irving Fisher. He would regulate the price average by controlling the money supply through a seigniorage charge determined by the tabular standard. This is really an indirect way of applying the tabular standard, and whatever defects the latter has are involved in his plan. This article is essentially a criticism of the tabular standard method of regulating prices.

Without going further back than the last century, we find several long periods in each of which what is called the price average tended in one direction. For forty years following 1809 the trend of prices was downward. Jevons estimates the fall at 145 per cent, the rise in the twenty-year period preceding the first date having been, according to him, as great. For the twenty-odd years succeeding 1849 the general trend again was upward. Beginning in the early seventies, however, we have the period of fall already mentioned, and we are now in a period of fifteen or sixteen years, in which prices have been steadily rising.

The agitation for the correction of evils attributed to changes in prices comes from different sources, according as the trend of the change is upward or downward. In the period of falling prices beginning in the early seventies, it was the interests of producers and debtors that were at the basis of the discussion, and it was the removal of the injuries or injustice which they were compelled to suffer through the fall of prices that was the aim of the schemes put forward during that period. The increasing burden of public debts, of mortgages, of long-time private debts, appealed to both the agitator and the student as sufficient to justify attempts to change the existing conditions. It was in this period that the demand for the establishment of international bimetallism, the demand for the remonetization of silver on a larger scale, and the still wilder proposition for the demonetization of gold, occupied public attention. All these schemes aimed at an indefinite increase in the money supply on the tacit assumption that an increased money supply will cause the desired rise in prices. Some people, unwilling to sanction an indefinite increase of the money supply by bimetallism or otherwise, proposed the use of the tabular standard for settling deferred payments. Meantime, throughout the period, all holders of fixed money incomes from different sources enjoyed the benefits of falling prices. They were able, with their money income, to buy more largely as the years went by. In spite of the fall of prices there was an unprecedented development of industry and trade in the period as a whole.

The agitation of the present period is not in behalf of producers or debtors. It is the receiver of a fixed or slowly changing money income or wage whose interests appeal to the reformer, the student, or the philanthropist. It is pointed out that the price average is rising more rapidly than wages or fixed money incomes, and that hardship is therefore entailed upon people who get these. Producers and long-time debtors are gaining instead of losing, as was the case in the period of falling prices; whereas consumers and creditors are losing, or to speak more correctly, are finding that the money which they get is buying less and less as the years go by.

Whatever hardships were suffered by the injured classes in the period of falling prices, are not compensated by the gains of the same classes in the period of rising prices. They are the same economic classes, indeed, but not wholly the same individuals.

In the opinion of some a change in the price average may be

regarded as a "social change"; or a change due to general influences, like changes in the value of land, and involves, therefore, what may be called an unearned increment. In their opinion, since it is a value due to social progress, it belongs to the community as a whole and should go to it, if some way can be devised to take it. There is some force in this view. But even if it were possible to award to the community at large any gain or loss of this kind, the amount so accorded would in some way be distributed among the members of the community with probably as much inequity as now. If, however, what we have in mind is the prevention of the absorption by individuals of a supposed unearned increment of value caused by changes in the price average, and its assignment to the community as a group or unit, all we need is a knowledge of the amount of change and some means for retaining this increment of value.

But the question of equity as commonly thought of in connection with price changes concerns the relative claims of debtors and creditors, sellers and buyers, wage-payers and wage-receivers, the payers and receivers of fixed money incomes. The problem is to prevent one of these parties from securing at the expense of the other any advantage that originates in price changes. What, from this point of view, would constitute a fair standard of value—one which will preserve the equities of exchange between the payer and receiver of money?

By a standard unit of value is ordinarily meant the value imputed to a definite quantity of a selected good. A stable standard or unit of value would therefore be a quantity of goods whose value did not change. The quest is to find an amount of value thus embodied in some article which as time passes will remain unchanged so far as concerns influences originating in the selected article. The dream of the advocates of an unvarying standard is to fix or objectivize an abstract quantity of value as unvarying as the unit of length. This amount of value must necessarily attach to different amounts of the same article at different times. In order to realize such a unit some think it sufficient to determine the quantity of goods to which is imputed, on the average, the value of the unit. In mathematical theory this is a correct solution of the problem. From the point of view of economic theory, however, it involves a fallacy, whether payment is to be made in units of goods or in gold whose amount is determined by the amount of units of goods for which it exchanges from time to

time. The fallacy lies here: Equal amounts of value under the hypothesis import unequal or different amounts of goods received and returned. This is so because the value imputed to a given quantity of goods today is different from what it was yesterday. The cause of this difference may be a change in the psychological element in the value of the articles, or it may be due to a physical scarcity or abundance of the articles, a change of supply; both elements of value may have changed. To return the same quantity of value is, therefore, not to return either the same articles or the same quantities of the same articles. It is simply to return "average" value or "social" value, composed of elements which to the individual who received them may have very different valuations from those imputed to them in general on the average or by society. Therefore his "welfare" is affected; but it is welfare that is the very purpose of the effort to secure a stable standard of value. It is the return of welfare that is of importance to the individual, and its elements for any individual are likely to be different from those of the welfare that may be attributed to any unit of "average" or "social" value.

In order to get a clear notion of the character of a just standard or unit of value, we must think of the money article as serving monetary purposes only. Mill remarks that theoretically there can be no less important thing in the social economy than the medium of exchange. While this statement taken by itself is open to criticism, it is doubtless true in the sense that Mill had in mind. In a frictionless economy, that imaginary state of affairs so often referred to in economic reading, in which competition is perfect and competitors intelligent enough to know and strong enough to care for their own interests, and in which the medium of exchange serves no other purpose than to effect exchanges and varies in quantity immediately in response to changes in amount of goods offered for sale, his statement would be true. It is conditions like these that we must have in mind in forming our notion of an ideal standard or unit of value. The money article, as money, derives its value entirely from its service in exchange; its volume is determined wholly by the demand for it in order to make exchanges. Its value reflects the changed amounts of goods offered and in itself it is simply a common denominator of relative values.

A just standard of value is one which, in each successive series of purchases, enables the purchasers and the sellers to maintain the

same relative economic positions so far as these depend on the amounts of money they possess. As ordinarily conceived, it is a means of preventing one individual or class from securing the gain, and another from suffering the loss, which arises from a change in the money supply. For, looking at the matter in a broad way, without inquiry into the character or causes of particular price changes, it would seem that a just standard would apportion any gain or loss due to changes in the supply of money so that creditors and debtors, wage-payers and wage-receivers, shall have the same relative purchasing efficiency as they had before the changes. In other words, it would be a standard which would prevent changes in the price average, due to changing money supply only, from inflicting loss or according gain to one at the expense of the others. As against each other, creditor and debtor have each an equitable claim to share in whatever gain may be caused by a change which is the result of some economic movement in the social group as a whole. Perhaps the best general statement of the solution is that the welfare of the community will be promoted by a method which apportions the loss or gain between the parties according to their economic efficiency as contributors to the general welfare. How far this general proposition is applicable, however, in special cases of price changes, depends on the causes of the changes.

It must be remembered that the value imputed at any moment to a given quantity of goods partly depends upon the amount of other goods offered in exchange for that quantity. Therefore, any proposal to establish as a standard a varying quantity of goods embodying an unchanging amount of value, is a proposal to establish a unit of measure to determine changes in the value of goods, when from two causes the thing in which the unit of value itself is embodied changes in respect to the amount of value a given quantity of it contains: changes on the demand or goods side, and changes on its own supply side. Now the very purpose of a unit of measure of value is to measure changes of value induced by or originating in the supply of goods only. The supply of the measure of value itself should have no effect upon the amount of value embodied in a given quantity of it; but commodity money is an article embodying value. Its value changes with its supply, altogether irrespective of changes in the value of goods which it is used to buy. If we could separate the changes due to the varying supply of the money article from the changes

due to the varying supply of the goods that it buys, and measure and correct the former, we would have a real solution of the problem of preventing price changes due to the varying supply of the money itself. No such solution has been found. A comparison of the ratios of increase of production of goods and of gold, even if satisfactory statistics were available, does not enable us to determine what part of the price advance is due to goods and what part to gold. For the elasticity of demand differs for different articles. A small change in supply of goods may cause a large change in price; but this is not true of gold. Hence, every proposal made involves the idea that the unit of value shall correct not only the changes due to the varying supply of the money article, but the changes originating in the varying supply of goods. But we do not want any corrective for the latter, except their own changing costs and supplies. The very purpose of industry and trade is to induce changes in the supply of goods so as to promote welfare, for welfare depends upon the multiplication of commodities.

All the proposals based on the tabular standard or index numbers for regulating the price level assume the quantity theory of money in some of its forms. It is not desirable now to go into the discussion of this subject. It is necessary, however, to point out the erroneousness of the assumption that all price changes arise from or are attributable to changes in the money supply. In the equation of prices the quantity of money is one element. It is illogical to say that it is the chief element. As Mill has remarked somewhere, since two and three are both necessary factors of six, it is incorrect to say that three is a more important factor than two. It is true that a change in the money supply may change the price average, and may cause a readjustment of relative prices. It is equally true that the same effects may be produced by a change in the quantity of goods, or in the rapidity of turn-over either of goods or of money. A stable standard is one which would correct those changes of which variations in the money supply are causal, for the purpose of measuring changes that originate in the other elements. As already remarked, every proposal so far made involves the correction not only of the money-supply-caused changes, but of the goods-supply-caused changes. This is to defeat in part the purpose for which a stable standard is wanted.

The only kind of standard which would answer the purpose

would be one which had no value as a commodity, and whose supply was induced and varied by the varying amounts of goods and by those only. An increase or diminution of its supply would be impossible, except as the volume of exchanges to be made increased or diminished. In other words, a money article must be one that gets its value from the demand for monetary uses and from that demand only. In the absence of a credit system the quantity relation between goods offered and money used in exchanges would be perfect, but as has been frequently pointed out, the only kind of money that will satisfy this condition is inconvertible paper.

Since it has been found impossible thus far to devise a single standard that will not vary, resort has been made to indirect methods of value-measurement. Several have been suggested.

Twenty-five years ago Professor Edgeworth, in a very valuable study of the whole subject[1] classified the methods which up to that time had been suggested. I think that no method involving any new principles has been proposed since that time. He pointed out that we may have two classes of solutions.

(1) A solution irrespective of any hypothesis as to the cause of the changes. This solution may be applied with the purpose of keeping the unit of measure constantly equivalent to the same quantity or value of goods or a quantity or value varying on some sliding scale.

(2) The other class of solutions involves consideration of the cause or causes of changes in prices and may or may not have regard to the quantities of commodities for which the unit of the assumed standard may exchange from time to time. The first class of solutions includes the tabular standard; the second, such schemes as bimetallism, remonetization of silver, or the increase or decrease of the medium of exchange in a general way without reference to specific units of measurement, on the supposition that the price changes are due to changes in the supply of money.

Doubtless because it is the easiest and most convenient the index number method of measuring price changes and its use as a basis for maintaining equilibrium has come into more general use. It will suffice for our present purpose, therefore, to discuss the principles involved in that particular method. In principle, the tabular standard is the selection, as a mathematical unit of value-measurement, of an average derived from prices of goods

[1] *Report Brit. Assoc. Advancement of Science, 1887.*

at a selected time, with which average, or unit, averages computed from similar data at other times may be compared and the differences adjusted. It attempts to restore equal average value by giving varying amounts of goods.

There are really two matters involved in the adjustment of prices, namely: how to maintain or restore the average of prices with the consequences of such action; and how to keep relative prices so adjusted that for the same budget of expenditure changes in prices will not induce changes in the cost of living.

Without going into hair-splitting distinctions it suffices for our present purpose to accept as an arithmetic statement of the average of prices, the index number obtained from ordinary tables of prices. Payment by the use of the index number as a unit would be payment by what is called the tabular or multiple standard. The index number or the average of prices at any time may be taken as indicating the disturbance of the price equilibrium at the moment, and the maintenance of that price equilibrium, or its restoration, is theoretically simple compared with the adjustment of prices so as to prevent an increase in the cost of living.

It is an old criticism of the tabular standard that it is based upon prices of a small number of articles, and therefore not representative of the full circle of expenditure. For our present purpose it is not necessary to consider either this objection or others that have been made concerning the source of prices, the omission of retail prices, and so on. So far as the present discussion is concerned, we may admit the possibility of framing a perfect series of index numbers, and therefore a perfect tabular standard, so far as completeness of data and their representatives are concerned. Out of these data, however, what we will get is still an average. It is an imaginary price whose changes represent changes in the group of articles as a whole. Theoretically, it is possible to measure the changes of this average from time to time; and theoretically, again, it is very likely that the changes could be offset, readjusted, possibly anticipated, through control of the supply of money either directly, or indirectly by some such device as, for example, Professor Fisher has proposed—the restoration of seigniorage. But slight study of the equation of prices is needed to bring out this fact. That equation may be written $GR = Mr + Cr$, where G stands for goods sold, M for the volume of money, C for the volume of credit, and the r's for their respective rapidities of turn-over. If for the moment we assume, what

in the opinion of the writer is not true, although Professor Fisher thinks the contrary, that C has a constant ratio to M, we may exclude for the moment the consideration of the C element. Now all that the maintenance of the price average imports is the maintenance of the equality of the two sides of this equation, irrespective of the factor in which changes originate. The equality between the two numbers of the equation may be disturbed by the change in the volume of goods, in the rapidity of their sale, in the volume of money, or in what is called its velocity or circulation. But equality may be restored by an appropriate change in any one of them.

If, as is sometimes done, we regard the equation of prices as we think of a series of inter-communicating tubes of different diameters, it is possible to maintain the average level of a liquid in all the tubes by the manipulation of the quantity of liquid in any one of them. In other words, it is possible in theory to keep the price average steady by manipulating the volume of money alone, whatever may be the practical difficulties in the application of the theory. But the hydrostatic illustration fails because the adjustment or restoration of the price average induces new forces that operate on all the factors in the problem, some of them directly tending to offset the adjustment which the change was made to bring about. That is not true in a series of tubes filled with water. There is no psychological element there. There is no factor in the problem that is conscious of the change and undertakes to counteract it.

For, although the disturbed average of prices may be restored by the manipulation of one of the constituents of the price equation, it is not a matter of indifference to society what method is adopted. If the volume of goods be increased, the increase will diffuse itself throughout the existing economic classes in accordance with the prevailing equities, or inequities, of distribution. General prosperity is increased. If the equilibrium be restored by diminishing the volume of money this would not be true even if the distribution of the withdrawal were in accord with the existing equities, or inequities, of distribution. But it would not so diffuse itself in the latter case. For the more abundant goods, or some goods, become, the less the demand for them by the wealthier classes; the more of them are available, therefore, for the poorer classes. It is not so with money, because the demand for it by the wealthier classes is as great as before to spend on the goods they now want.

If prices are rising because of lessened production, the restoration of the former average of prices by artificial diminution of the money supply will be of little advantage. For it will not increase the amount of goods offered for sale. There simply is not as much of anything as before. No manipulation of the money supply will alter this fact or lessen in any degree hardship caused in the way of increased cost of living. Therefore, when prices are rising it becomes us to determine whether the rise is due to relative scarcity of goods, or to some other cause. It is obvious, therefore, that any scheme for the maintenance of the level of prices based on the manipulation of the supply of money alone can be justified, if at all, only so far as it is applicable to changes in prices caused by changes in the supply of money, and not to changes in prices caused by variations in the supply of goods, or the rapidity of their sale, or, as I hope to show later, in the volume of credit. This view limits very materially any advantages that may be supposed to accrue from devices that affect the money supply.

In the discussion of rising prices much emphasis has been properly placed upon the largely increased supply of gold as the cause of the change. But we cannot rest here. We must ask whether other causes have operated and also whether the increased supply of gold is to be regarded as the ultimate cause of the change, or rather is not itself one of the results of more fundamental forces which have called it out as a cure or balance of some other tendencies. It certainly is remarkable if the alternate increase and decrease of the gold supply in the past one hundred or one hundred and fifty years is accidental in the sense that the increased supply has been discovered, or new methods of increasing it have been discovered, so regularly as the facts would indicate. Must we not ask rather whether the gold supply is not a consequence of the operation of some as yet unknown social law which brings out this increased supply to meet or to stimulate the growing and changing needs of industry? If so, to check this increase of money supply would be to check those influences or forces, whatever they are, that are promoting industry and trade. To think of the increased gold supply as an accident, and the cause of the hardships that price changes produce, is to take too narrow a view of the circumstances. The cheapened processes of producing gold have been brought about by the need for more gold instead of the reverse being true. To be sure, a

movement in either direction, once started, is likely to overshoot the mark. The regularity of the alternate increase and falling off of the gold supply of itself arouses a suspicion that the movement is a consequence of some yet unrecognized forces, a cure for some existing ills, and not itself primarily a cause of ills. There would seem to be a field of inquiry here that no one has yet touched.

Moreover, for the past fifteen or twenty years production and trade have been increasing by leaps and bounds. More trade has needed more medium of exchange, and more medium of exchange has reacted in producing more trade. It is not necessary for the purposes of this article to go into the presentation of statistics of production and trade. There are certain generally acknowledged facts with reference to the production of some articles of wide consumption which serve the purpose. When we complain of the rising cost of living, we think of the increase in the price of beef and perhaps of wheat and its products. Making all due allowance for the manipulation of prices by monopolies, it can hardly be disputed that for years there has been a growing scarcity of beef, and therefore of meat products. For some reason, in Illinois, for example, for a decade or more farmers have been pushing agronomic agriculture to the detriment of animal husbandry. The same is true of other states which once had considerable surpluses of beef for sale. The prices of beef and its products therefore have gone up. No restoration of the price level will increase the supply of beef. Those in whose budgets it figures cannot get as much of it as they used to get, for there simply is not enough to go around in the old way. In crop products too, there have been several seasons of relative shortage, and the effects of the shortage of a single season are spread over several years. We have practically ceased to export wheat and beef, and the foreigners we formerly fed must find their supply elsewhere.

In addition to the difficulty of adjusting the average of prices by injection or withdrawal of money is the greater difficulty of distributing any additional supply of money, or withdrawing any portion, so as to preserve existing economic relations among classes and individuals. If the money supply were costless, so that it continuously changed only in response to and in proportion to demand, or supply of goods, and if the distribution of the extra supply of money were immediately effected among income receivers so as to preserve their previous relative economic po-

sitions, then we might hope to accomplish the proposed purpose; but the supply of money is from independent producers working for profit by providing this supply and not directly in response to the changing volume of production and trade. The distribution of any extra supply is a double one. It must be distributed among the classes and individuals who receive money income in a way to preserve their former monetary relationships, and the individuals in turn must expend it in their budgets in such a way as to keep the items of their budgets in the same relative positions. The first of these distributions or withdrawals could only take place as it does now. It would spread itself after intervals from one class to another. The monetary relations of different classes would not be different and relative welfare would be unchanged. But the problem is to get proportionately more to those who now have least. The hardship is due to the slowness of adjustment of money supply to changing real costs of production. This would not be prevented by the restoration of a raised or lowered average of prices, and it is restoration and not continuous maintenance that is possible, even under Professor Fisher's plan, so long as the gold supply is not controlled but produced for profit.

The second part of the distribution of a new money supply is in individual expenditure. It is sometimes possible here to reduce or prevent higher cost of living by readjustment of expenditure. There is some reason to think that present high cost of living for most people is due in part to higher standards of living. This is not true of those whose income affords a bare subsistence and must be spent on the bare necessaries of life. But some at least of these articles are high because their production has not kept pace with population. No mere change in the volume of money would bring them any more within reach of the people on the margin of subsistence. What is needed here is a juster distribution of wealth. But for many people higher prices of some things are offset in the budget by lower prices of others. One ray of light is thrown on this point by the tremendous growth of certain kinds of amusement, like moving picture shows. The "middle class" at any rate is finding it possible to spend more on such things in the face of higher prices. Wheat has risen, but sugar, for example, has fallen. A readjustment of expenditure may secure as high a standard of living without much if any increase in total expenditure. Whether or not this is the case at any time

is a question of fact to be determined by the evidence. The evidence at present is more or less disputed. In this connection Professor Patten's remarks on family budgets in his recent monograph on the reconstruction of economic theory are very pertinent.

Another matter to be considered in connection with an effort to keep the price average steady by any plan based on index numbers is the reaction on production. As has been remarked, such a plan attempts to remedy, by changes on the money side of the price equation, changes which originate both on the money and on the goods side. Now changes in the values of the latter should have free play in a competitive economy. They are the causes or results of the forces that constitute competition. They are the changes that it is the purpose of a monetary unit to measure. It is otherwise with the changes of prices that originate in the money unit itself. They are the things we would like to prevent. To vary the unit of value in a way to offset changes on the goods side of the price equation is to check the operation of forces which in a competitive industry we want to encourage. It would tend to deprive the abler producers of their opportunities and gains when prices are changing. It would not be to their interest to lower costs if immediately the saving were offset partly or wholly by a change in the price of their goods through manipulation of the money supply. On the other hand, when prices are rising the producer will not respond to the stimulus for a larger output if by the time the increase of output is made its advantage is to be lost in part or entirely by changing the price average.

Moreover, the producer would have difficulty in adjusting his costs at every change of the price average by a device based on the tabular standard. For a readjustment of the general price average will not diffuse itself among relative prices without disturbing these. We know that the elasticity of demand is not the same for all articles. Even if an addition to the money supply distributed itself in the first instance according to the scale of existing relative prices, a new scale of relative prices would probably emerge at once, because the effect on the demands for the different goods would not be proportionate. This would be a disturbing factor in the cost of future production, and would lead immediately to a new adjustment of relative prices and in turn to the need for a new adjustment of the price average.

We must remember that we may have the same average of

prices with very different scales of relative values. To push up the average by an addition to the money supply, for example, will not help the producer who spends his income mainly on a raw material whose price is one element in the table but which has fallen or risen while the prices of other articles were going in the opposite direction. It is poor comfort to him to have general prices raised on the ground that most articles have fallen if the article which constitutes his main cost has meantime risen. If prices fall on account of lowered cost of production, the movement, if uninterfered with, will tend to check production in the next period. It is a common experience that an oversupply of grain, for example, through one or two years, will be succeeded by a smaller average before long. This is an attempt to adjust the price average to correct the fall, and the effect of the correction will be felt when the smaller product of the next production period comes into the market. The effect is to push prices back again. If, in the meantime, an effort has been made to do this independently by the manipulation of the money supply, a twofold impetus is given to the movement.

Nor can we pass by the possible effects on wages of adjusting the price average. The present demand to secure a stable average of prices is said primarily to be in behalf of the wage-earner. On the face of the matter this appears true. It is not clear, however, that any benefit that might come to him in this way would not be offset in other ways. In the first place, as has been pointed out, the hardship to the wage-receiver is caused not by an increase of the money supply, but by the fact that it is not immediately diffused among the various economic classes of society. It spreads itself, as Cairnes pointed out, by jerks. It benefits the class that first receives it. Its diffusion is brought about only by a struggle. When prices are disturbed and laborers struggling to have their money wages raised, they would have an added difficulty if whatever hardship they were experiencing were ostensibly to be removed by the adjustment of prices. Since that adjustment cannot be made continuous, and since the term before it would take place under any scheme would not be long, the conditions which would justify their insistence on raised wages would not continue long enough to secure them. Again, producers in industries whose costs fell during a period through which the price average did not change would have less inducement to share the benefits of the lowered costs with their wage-

receivers in their industry. Why should they? If the latter cannot by struggle force up their wages, whatever advance might be made will be rendered unnecessary by changing the price average.

Such, in the writer's opinion, are the difficulties in the way of the success of any plan for keeping prices steady through a direct variation of the money supply on the basis of index numbers. Are they met by the indirect application of the tabular standard whereby the dollar would be kept steady in value by the abstraction of more or less seigniorage? It is difficult for the writer to see that they are. When in a period of rising prices a sum of gold is presented for coinage, seigniorage will be exacted in an amount dependent on the change of the index number, and the rest will be coined into dollars. The change of prices on which the seigniorage, and therefore the additional supply of money, is based, is still the change in the average, irrespective of the side of the price equation on which it originates. The plan is based on the supposition that all changes in the price average can, and may properly, be corrected by adjustment of the money supply. We have seen that in mathematical theory they can be, but that there is reason to doubt that a corresponding economic adjustment will follow, in the sense of promoting welfare or diminishing the difficulties of relative scarcity. In so far as high prices are caused by relative scarcity of goods more of these new dollars will get into the hands of the economically strong, just as dollars do now, and the total relative purchasing powers of the economic classes will be substantially unchanged. Moreover, under this plan, the money supply still increases. It is reduced in amount, to be sure, and so far as the corrective needed is a reduction of the money supply its operation in this respect would be good. It is, however, the dollar put into circulation and not the seigniorage kept out of it that affects prices. There seems to be no necessary connection between the percentage of change in the price average and the amount of seigniorage which it would be necessary to withdraw to keep that average from rising further. The direct connection at any rate is between the change in the average, and the new supply of money. The best that can be said of the plan is that it would retard the influx of an increased gold supply.

The writer has expressed doubt of the correctness of Professor Fisher's statement that the volume of credit has a constant relation to money. Professor Fisher's argument is admirably put

and well supported, but hardly seems to the writer conclusive. There is a usual, or if you please, a normal, volume of credit carried on the basis of a given money supply. That volume, however, may be very much expanded on occasion. There is a limit beyond which it cannot be expanded. At this limit there is doubtless a constant relation between the volume of credit and the money supply on which it rests. Below this maximum there is room for all sorts of variations in the relationship. When through a considerable period industry and trade have been expanding so rapidly as to demand a more rapid increase in the means of exchange than the money supply provides, credit exchanges will be pushed to and maintained at the limit of proportionality to money supply for a considerable time. There will in time be pressure to increase the money basis of credit, and the supply of money will be stimulated. Activity in providing this supply will in time overdo the needs of the situation, and for a period of years money exchanges will grow more rapidly than credit exchanges. This is particularly true in a country like our own with large areas in which newly established production calls for money rather than credit payment. It is also true, however, in any country, when production begins a career of new activity. There is therefore a kind of periodicity in the amount of use of credit and of money respectively in effecting exchanges.

The view that credit exchanges must have a constant relation to the money supply rests upon the common statement that credit in the last analysis rests upon gold. This statement, of course, is correct, but needs interpretation. It is capable of two meanings. It may mean that every credit transaction rests directly upon a gold basis, and that against it there is directly maintained somewhere a gold reserve. It may mean that credit transactions are built on other credit transactions, a gold reserve being maintained somewhere for the balance after cancellation. Now the point at which cancellation will take place and the volume of transactions which may be settled thereby before the balance of indebtedness is struck are very varying. Consequently, while it is correct to say that the whole series of credit transactions rests upon a gold reserve, the amount of reserve needed is what the balance of indebtedness after cancellation calls for. This amount will be larger or smaller according to the state of confidence. In other words, to say that credit rests upon gold may mean that against every credit transaction is immediately some reserve of

gold; or that some reserve of gold is maintained to settle the balance after a prolonged period of cancellation. The latter, in the opinion of the writer, is the correct view, and the conclusion follows that the volume of credit possible on a given money supply is elastic. If so a mere manipulation of the money supply could be offset by changes in the volume of credit.

There are several other difficulties in the plan which, without doubt, Professor Fisher has foreseen. No remedy is adequate which does not provide for falling as well as for rising prices. The seigniorage retained would furnish a fund which, as long as it lasted, would take care of the needs of coinage during a period of falling prices. After that, as Professor Fisher truly remarks, we would be in no worse condition than we now are. Still we would be in as bad a condition. That is, we would be without a remedy. The practicability of the plan, even if it is advisable to maintain a price average, is of course remote. All this, however, does not detract from the praise that, in the writer's judgment, Professor Fisher deserves, not only for his eminently valuable contributions to monetary theory, but also for devising so ingenious a scheme. It is workable under certain conditions, and within limits might do considerable good. But the writer at least cannot regard it as an adequate or scientific remedy for the situation. Statistical inquiry may in time enable us to find one. Certainly the work of Professor Fisher encourages us to hope that some results may be accomplished in the future, but the time is hardly yet.

Are we then to content ourselves with letting things alone? To the mind of the writer there is some hope of preventing the hardship due to rising prices by action in other directions than in the manipulation of the money supply. The whole conservation movement, looking towards increased production and lower costs, is one movement in the right direction. The regulation of "combinations" of whose evil results we have too much, is another, as is also reduction in the expense of distribution of products. The establishment of a somewhat definite standard of living as the American standard, so to speak, which must be met by wages established through minimum wage boards is another means of avoiding the hardship of the rising cost of living. Efforts of labor unions, boards of arbitration and other agencies to lift wages are more continuous and likely to be productive of quicker results than can be brought about by an occasional or periodic

manipulation of the money supply to offset forces that are continuous in their operation; for they aim at the important element in the situation, namely, the immediate diffusion among different economic classes of the increased supply of money.

Other measures looking in the same direction are insistence upon the maintenance of adequate bank reserves, and the regulation of banking credits. If we should insist upon the maintenance of a considerably larger gold reserve in proportion to the volume of credit granted by banking institutions, the volume of exchange medium would be curtailed and would be under better regulation.

What we need is a scheme of anticipatory action, whereas all proposals thus far are to cure ills that have been suffered. Forces have already largely adjusted themselves to the changes before the remedy is applied. To try to cure the evil now is to undo the adjustment. Or else the attempt to cure the hardship will be foreseen and discounted, so that the adjustment again will do more harm than good.

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